



# 2005 Minerals Yearbook

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## CALIFORNIA

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# CALIFORNIA

## LEGEND

— County boundary

★ Capital

● City

1 — Crushed stone/sand and gravel districts

## MINERAL SYMBOLS

(Major producing areas)

Ag Silver

Au Gold

B Borates

Bent Bentonite

Cem Cement plant

Clay Common clay

CS Crushed stone

Dia Diatomite

Do Dolomite

DS Dimension stone

Fel Feldspar

Ful Fuller's earth

Gem Gemstones

Gyp Gypsum

Gyp Gypsum plant

IS Industrial sand

Ka Kaolin

Lime Lime plant

LS Limestone

MgCp Magnesium compounds

Per Perlite

Per Perlite plant

Pum Pumice and pumicite

Pyrp Pyrophyllite

RE Rare earths plant

S-o Sulfur (oil)

SaCp Saline compounds

Salt Salt

SG Construction sand and gravel

Sh Shale

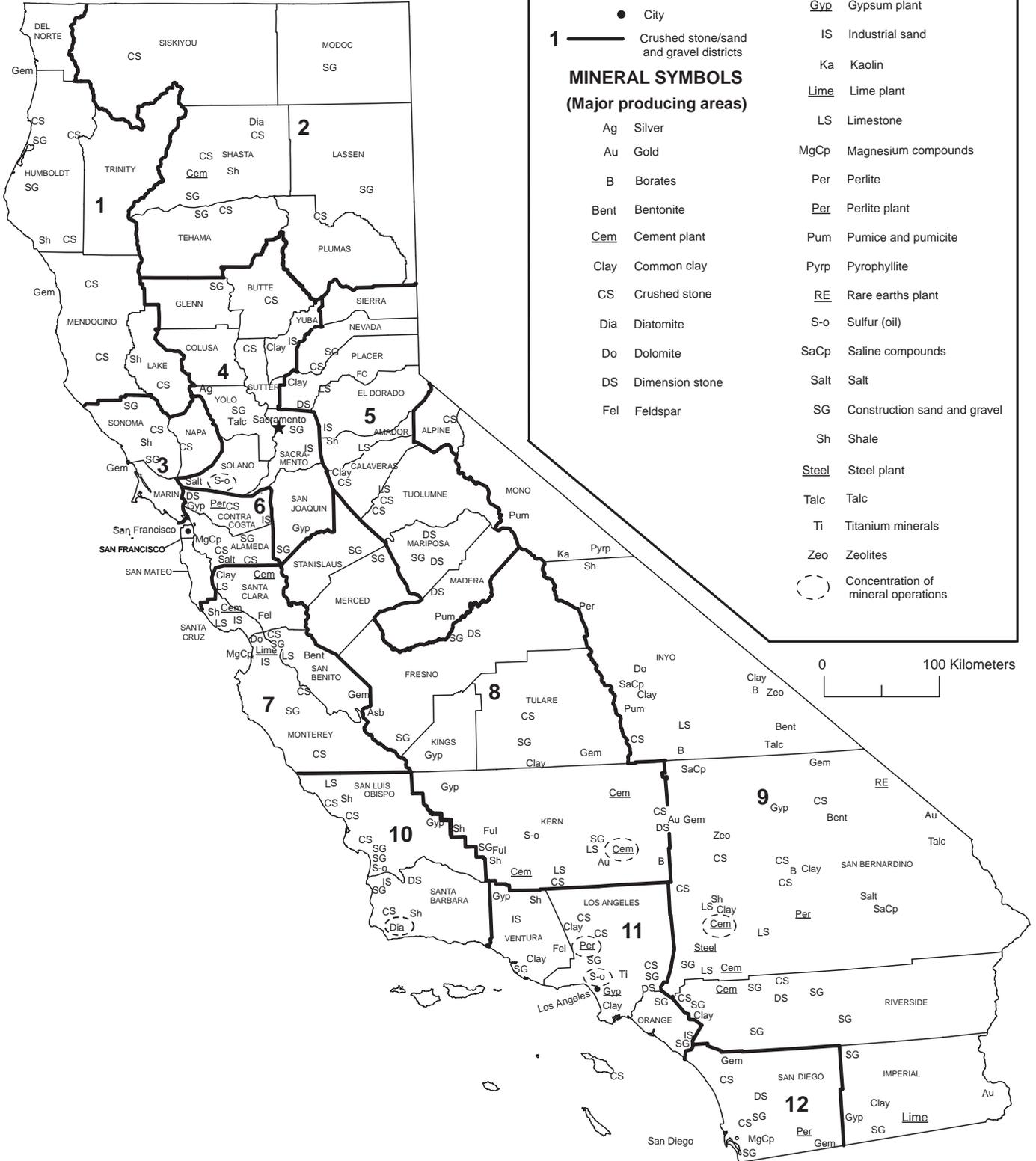
Steel Steel plant

Talc Talc

Ti Titanium minerals

Zeo Zeolites

(---) Concentration of mineral operations



# THE MINERAL INDUSTRY OF CALIFORNIA

This chapter has been prepared under a Memorandum of Understanding between the U.S. Geological Survey and the California Geological Survey for collecting information on all nonfuel minerals.

In 2005, California's nonfuel raw mineral production was valued<sup>1</sup> at \$4.24 billion, on the basis of annual U.S. Geological Survey (USGS) data, an increase of 12.7% from the 2004 value, which was up by 9.3% from 2003. The State was second in rank among the 50 States in total nonfuel mineral production value in 2005, following 6 consecutive years as first in the Nation. California accounted for 7.7% of the U.S. total.

Industrial minerals accounted for more than 98% of California's nonfuel mineral value; the remaining value resulted from the mining of gold, silver, and iron ore (descending order of value). In 2005, California continued as the leading construction sand-and-gravel-producing State, again accounting for more than 13% of the commodity's total U.S. mine production and 19.3% of the Nation's total value for that mineral commodity. Construction sand and gravel was, by value, also the State's leading nonfuel mineral, accounting for 34% of the State's total nonfuel mineral production value. Cement (portland and masonry) was the second ranked nonfuel mineral, followed by boron minerals, crushed stone, soda ash, and diatomite; these six accounted for nearly 95% of the State's total industrial mineral value (table 1).

In 2005, increases in the values of construction sand and gravel (up by \$160 million), portland cement (up by \$130 million), crushed stone (up by \$91 million), and boron (up by \$87 million), led California's significant increase in nonfuel mineral production value for the year. The production of each of these commodities showed relatively small-to-only-slight decreases in production, indicating higher overall unit values for each. With smaller yet significant increases in value, a similar pattern of production decrease was evident for lime and soda ash. Also showing smaller yet significant increases in value (in descending order of change) were masonry cement, gypsum, industrial sand and gravel, and salt, each having an increase in unit value. The largest decreases in value for the State's nonfuel mineral commodities were those of gold and common clays. All other changes in value were about \$1 million or less (table 1).

California continued to be the Nation's only State to produce boron in 2005 and it remained first in the quantities of construction sand and gravel and of portland cement produced (descending order of value), and it also remained the first of four diatomite-producing States. The State continued to rank second among three States that produced soda ash; second in masonry cement; third in feldspar; fourth in gemstones (based upon value); fifth in gypsum, perlite, and magnesium compounds;

and seventh in fuller's earth. Although California rose to 3d from 5th in the production of pumice and pumicite, to 4th from 5th in industrial sand and gravel, and to 9th from 10th in salt, it decreased to 8th from 5th in gold, to 8th from 7th in bentonite, and to 9th from 6th in common clays. Additionally, California was a significant producer of crushed stone and dimension stone.

The following narrative information was provided by the California Geological Survey (CGS).<sup>2</sup> In 2005, approximately 9,500 people were employed at the mines and mineral processing plants of about 820 active mines that produced nonfuel minerals in California.

## Commodity Review

### *Industrial Minerals*

**Boron.**—California produced nearly 25% of the world's boron. On the basis of annual USGS data, the State's boron (minerals) production was valued at \$713 million and was its third-highest dollar value nonfuel mineral (table 1). Boron was produced by four companies at five different facilities in the State. Production decreased by 5% for the year to 1.15 million metric tons (Mt), but a higher dollar value per metric ton (t) contributed to a nearly 14% increase in its total value from that of 2004. U.S. Borax and Chemical Inc. (a subsidiary of Rio Tinto Inc.) led the State (and the Nation) in the production of boron at its open pit mine in Boron, CA, in southeastern Kern County.

**Cement.**—Although the total value of portland cement in California in 2005 rose by 13% to \$1.13 billion (on the basis of USGS data), the State experienced a shortage of portland cement in 2005, driving the average (estimated) price up from 2004 by nearly 16% to more than \$97 per metric ton (table 1). Portland cement production for 2005 amounted to 11.6 Mt, down from 11.9 Mt in 2004 (table 1). CEMEX S.A.B de C.V. (CEMEX) completed the acquisition of the worldwide assets of RMC Group plc of the United Kingdom, including RMC Pacific Materials Inc.'s cement plant in Davenport (western Santa Cruz County), on March 1. The overall acquisition, including the \$5.8 billion acquisition of the RMC Davenport, CA, plant and a number of concrete plants, resulted in CEMEX becoming one of the world's leading producers of ready-mixed concrete (van Oss, 2007, p. 16.4) and the third ranked cement producer in the world.

Texas Industries, Inc. announced plans in April to expand and modernize the company's Oro Grande portland cement plant in San Bernardino County. The 2-year, \$360 million project will increase the facility's annual cement capacity from 1.1 Mt to 2.1 Mt.

<sup>1</sup>The terms "nonfuel mineral production" and related "values" encompass variations in meaning, depending upon the mineral products. Production may be measured by mine shipments, mineral commodity sales, or marketable production (including consumption by producers) as is applicable to the individual mineral commodity.

All 2005 USGS mineral production data published in this chapter are those available as of December 2006. All USGS Mineral Industry Surveys and USGS Minerals Yearbook chapters—mineral commodity, State, and country—can be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals>.

<sup>2</sup>Susan Kohler, Senior Engineering Geologist, authored the text of information submitted by the California Geological Survey.

Also in San Bernardino County, Mitsubishi Cement Corp.'s planned startup date of May 2005 for its newly approved 81-hectare (ha) expansion of its Cushenbury Limestone Mine was not met. The company was in the process of mitigating the environmental impacts associated with the expansion that was approved in October 2004, which added about 45 Mt of cement-grade limestone reserves.

**Construction Sand and Gravel.**—Vulcan Materials Co. was California's leading producer of construction sand and gravel (Bolen, 2007<sup>3</sup>). Teichert Aggregates' (a subsidiary of A. Teichert & Son, Inc.) Aspen VI pit and plant operation in Sacramento County was the State's single-leading sand-and-gravel-producing operation and was second in the Nation only to California Portland Cement Co.'s Dupont Pit in Pierce County, WA.

Importation of sand and gravel by ship and barge from Canada and Mexico to California ports continued through the bay areas of Los Angeles, San Diego, and San Francisco. California imported nearly 2.2 Mt of sand and gravel during 2005 compared with about 3 Mt in 2004. Hanson Building Materials America Inc. (Hanson Aggregates) was the leading importer of aggregate in the State.

Hanson Aggregates purchased Mission Valley Rock Co.'s Sunol sand and gravel operation in Alameda County in June. The acquisition took place 6 months after the California Court of Appeals of the First District upheld a 2003 State Superior Court decision that allowed a 56-ha (139-acre) expansion of Mission Valley Rock's existing Sunol operation. The mine expansion added 39 Mt of construction-grade sand and gravel reserves to mine for likely use in the south San Francisco Bay area, which was in short supply of sand and gravel aggregate. Hanson planned to start production from the expansion site by summer 2006. The company also purchased Berkeley Ready Mix Co. Inc. and Berkeley Asphalt Co. in 2005. The two companies operated plants in the Berkeley, Oakland, and Sunol areas.

Kaweah River Rock Co. was granted a permit by the Tulare County Board of Supervisors in June to mine 113 ha of land south of the company's existing operation along the Kaweah River. The permit added about 14-18 Mt of alluvial sand and gravel reserves to the northern Tulare County area. Local residents appealed the Board's approval and the project was put on hold until a decision could be made on the appeal.

CEMEX California Cement LLC was granted a permit in December to build a 4.5-million-metric-ton-per-year (Mt/yr) aggregate processing plant near Apple Valley, San Bernardino County. At the plant, high-quality concrete-grade aggregate will be made of waste rock from CEMEX California's Black Mountain Limestone Quarry. About 9 Mt of waste rock was already stockpiled at the Quarry. The rock was to be hauled about 3 kilometers by truck to the new processing plant, which was scheduled for completion in 2008. CEMEX California planned to run the plant at full capacity, which would make it one of the leading aggregate operations in the State.

Robertson's Ready Mix Concrete Inc. commenced mining at the Cushenbury Sand and Gravel Mine in San Bernardino County in the spring, having purchased the nearly 110-ha

property from Crushed Rock Products Inc. in December 2004. A mining permit to operate the mine had been approved back in 1993, but no mining activities took place until Robertsons acquired the property. Robertson's Cushenbury mine contains nearly 23 Mt of construction-grade sand and gravel reserves that may be mined through the year 2023.

Teichert Aggregates was granted approval in July to remove from 10.9 to 13.6 Mt of gold dredge tailings located on 236 ha within the City of Rancho Cordova in Sacramento County. The tailings were to be transported by conveyor to the company's Grantline plant and then be processed for use in construction aggregate. Teichert estimated that it would take from 4 to 7 years to mine and remove the tailings. Upon completion, the land would be reclaimed to its original pre-gold mining topography. Elliot Homes, Inc. of nearby Folsom planned to build 12,000 new homes and provide about 37 ha (91 acres) of commercial space on the reclaimed site.

Syar Industries Inc. was given final approval in August to mine 14.7 ha of alluvial sand and gravel along the Russian River near Healdsburg in Sonoma County. The permit allowed for approximately 3 Mt of concrete-grade alluvial sand and gravel to be mined from the site by April 15, 2006, although, anticipating the need, Syar planned to apply for an extension of the mining deadline. Material mined at the site, referred to as Phase VI, was to be stockpiled at Syar's Healdsburg aggregate plant to be sold as needed.

**Crushed Stone.**—Granite Rock Co. Inc.'s Wilson Quarry was California's leading crushed rock producer for 2005. San Benito Supply Inc.'s Hidden Canyon Rock Quarry project, which is located near Greenfield in Monterey County, was approved in March. The permit allowed for approximately 6.4 Mt of crushed granite and 3.2 Mt of decomposed granite to be mined during a period of 20 years. A maximum of about 272,000 t (300,000 short tons) of rock may be mined annually from the site.

**Industrial Sand and Gravel.**—The H. Lima Co.'s Loop Ranch Limestone Mine project, near Tehachapi in Kern County, was approved in July. The 113-ha mine will provide nearly 4.5 Mt of limestone for use as fertilizer, as well as for such industrial uses as ceramics, glass manufacturing, and roofing. Mining was expected to start in the spring of 2006.

Blue Mountain Minerals (a subsidiary of The Portola Co.) was granted a permit in August to increase the production of limestone at two marble quarry sites in Tuolumne County from about 735,000 t to 1.07 Mt/yr. The approval was contingent on combining the company's Blue Mountain Quarry and Columbia Quarry into one permit and one reclamation plan. Blue Mountain mines limestone for use in glass manufacturing, poultry feed, and asphalt roofing shingles.

**Rare Earths.**—As required by California's Environmental Quality Act (CEQA), an Environmental Impact Report (EIR) was submitted and a subsequent permit was approved for Molycorp, Inc.'s Mountain Pass Mine in San Bernardino County in July 2004 to enlarge the current pit and construct a new onsite tailings impoundment and evaporation pond for the mine. The new permit allows the existing pit to be mined down to nearly 230 meters (m) below ground surface (an additional 76 m), thereby increasing the mine life by 30 years. However, competition from rare-earth producers in China has

<sup>3</sup>References that include a section mark (§) are found in the Internet References Cited section.

contributed to the postponement indefinitely of the reopening of the Mountain Pass Mine. The mine has been idle since 1998 when Molycorp, Inc. was cited for spilling low-level, naturally occurring radioactive waste from a broken pipeline. Before its closure, the mine was the only producer of rare earths in the Nation. The company planned to reopen the mine in late 2007.

## *Metals*

**Gold.**—Despite the dramatic increase in gold prices for the year, California’s production continued to decline in 2005. On the basis of data obtained by the CGS from State sources, annual reports, and estimates, annual production amounted to about 2,030 kilograms (kg) (65,300 troy ounces)—down by about 38% to 40% from that of 2004. The increased gold price contributed to a lesser drop in total value of 26%. Gold value amounted to an estimated \$29 million for 2005 as compared with about \$40 million for 2004.

Gold processing from existing heap-leach ore piles continued at four southern California open pit mines during 2005. These included Western Goldfields Inc.’s Mesquite Mine in Imperial County, Glamis Rand Mining Co.’s Rand Mine in Kern County, Canyon Resources Corp.’s Briggs Mine in Inyo County, and Quest Capital Corp.’s and MK Resources Co.’s Castle Mountain Mine in San Bernardino County. Mining operations had ceased at all four properties.

California’s leading gold producer for the year was Western Goldfield’s Mesquite Mine, acquired from Newmont Mining Corp. in November 2003. Mining operations ceased in May 2001, but Western Goldfields made plans to restart open pit mining operations in late 2006 or early 2007 in an expanded area of the mine that had been permitted by Newmont in the spring of 2002. Western Goldfields also planned to re-treat the existing heaps for additional gold recovery and explore high-grade ore extensions at the mine at depth. The company estimated that the new expanded area may contain as much as 39 Mt of gold ore averaging 0.72 grams per metric ton (g/t) (0.021 troy ounces per short ton), yielding about 28,000 kg (900,000 troy ounces) of gold. Additional nonpermitted gold resources at the Mesquite Mine have been estimated to be about 31,000 kg (1 million troy ounces).

Canyon Resource Corp. started an exploratory program to determine the feasibility of restarting mining operations at the Briggs Mine in Inyo County. The company had ceased mining in April 2004. Drilling started in the fall of 2005 on two potential high-grade underground mining targets associated with the Goldtooth Fault and between the previously mined Briggs North and Goldtooth pits. Canyon Resources was also evaluating potential ore bodies adjacent to the Briggs Main and Briggs South pits that could be mined by open pit methods.

The Glamis Rand Mining Co. completed heap leaching at its Rand Gold Mine in Kern County. During the current mine’s 15 years of modern-day operation, nearly 31,000 kg of gold was produced. There were no plans to reopen the mine, at which reclamation was in progress.

MK Resources Co. and Quest Capital Corp. produced a small amount of gold during the completion of heap leaching at the

Castle Mountain Mine in San Bernardino County; the mine is undergoing reclamation and there were no plans to reopen it.

Sutter Gold Mining Inc. was granted a wastewater-discharge permit from the California Regional Water Quality Control Board in October for the Sutter Gold Project in Amador County. The company called it the “final major permit” needed for the project—a proposed 217-ha underground gold mine that includes the historic Lincoln Gold Mine located along California’s Mother Lode gold belt. The Lincoln was last mined in 1912 and had produced a total of about \$2.2 million in gold during its life. The Sutter Gold Project was backed by two parent companies (U.S. Energy Corp. and Crested Corp.) that entered into a joint venture under the name of USECC. Exploration at the project site since the 1980s has indicated gold reserves of as much as 6,220 kg. USECC expected mining at the project to commence sometime in 2006.

The Idaho Maryland Mining Corp. (a subsidiary of Emgold Mining Corp.) submitted a mining permit application in October to the City of Grass Valley in Nevada County to reopen the historic Idaho Maryland Gold Mine. The mine was California’s second ranked gold producer during its lifetime (1862 to 1956) with a total production of 74,600 kg (2.4 million troy ounces) valued at \$70 million. The company estimated that the mine may contain another 44,000 kg (1.4 million troy ounces) of gold valued at more than \$600 million (based upon a gold price of \$450 dollars per troy ounce). Reopening the Idaho Maryland Mine would require the de-watering of the existing underground mine workings during a period of time (expected by the company to be less than 1 year) by pumping out about 1.89 billion liters (500 million U.S. gallons) of water. An important feature factoring into the proposed Idaho Maryland Mine project was the use of mine waste at an onsite manufacturing facility to produce ceramic products. The permitting phase of the mine reopening was expected to be complete by May 2007 with mining projected to start in late 2007. A series of meetings and workshops were to be held during 2006 to educate the public and to gain local support for the mine.

Additionally, gold was produced as a byproduct at numerous alluvial sand and gravel mines located mainly in the northern and central part of the State. California also had several small underground gold mines that mainly produce specimen gold.

**Other Metals.**—Silver production made up less than 1% of California’s total metal production. All the silver produced in California was a byproduct of gold production. Iron ore mined in California was used in the production of portland cement and was considered an industrial mineral.

## **Government Legislation and Programs**

### *State and Local Regulations*

The Governor signed California Assembly Bill 574 in the fall clarifying existing industry regulations regarding the use of recycled concrete. The bill establishes a specific definition for recycled concrete, states the specific quantities of recycled material allowed in final concrete products, and sets requirements regarding consumer notification of recycled

aggregate use. The bill was designed to reduce the amount of concrete disposed of in landfills by encouraging more widespread use of recycled concrete aggregate.

California's South Coast Air Quality Management District (AQMD) passed Rule 1157, a measure intended to limit the dust allowed from construction materials operations throughout southern California metropolitan areas in Los Angeles, Orange, Riverside, and San Bernardino Counties. The measure went into full effect in December and affects about 400 sand and gravel facilities, concrete batch plants, and asphalt plants. It included new standards for dust emissions, dust plume height restrictions, equipment dust suppressants, sweeping of paved roads, chemical stabilizers on gravel roads, and mitigation measures to reduce dust tracked onto public roadways. The new rule was intended to help the AQMD region meet a 2006 federally mandated deadline for air quality, especially with regard to particles smaller than 10 microns.

### *The California Geological Survey*

The California Geological Survey's Mineral Land Classification Project, a mandate of the State's Surface Mining and Reclamation Act, continued to provide State and other government agencies with mineral resource maps that have proved to be of significant value in land-use planning and

mineral resource conservation. As of yearend, the CGS had classified a little over one-third of the State with regard to its mineral resources. The CGS continued work on aggregate classification projects in the Palm Springs and San Bernardino areas in San Bernardino County, the Claremont-Upland area in San Bernardino and Los Angeles Counties, the North San Francisco Bay area in Marin and Napa Counties, and in San Joaquin County. The CGS also worked on updating CGS Map Sheet 52, a map that shows data on current aggregate supply and 50-year aggregate demand for 32 aggregate resource regions throughout California (Kohler, 2007§).

### **Reference Cited**

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### **Internet References Cited**

Bolen, W.P., 2007, Directory of principal construction sand and gravel producers in the United States in 2005: U.S. Geological Survey Mineral Industry Surveys, accessed August 29, 2007, at URL <http://minerals.usgs.gov/minerals/pubs/commodity/aggregates/sgdir05.pdf>.

Kohler, Susan, 2007 (February 7), Aggregate availability in California: California Geological Survey Map Sheet 52, Publication Release, accessed September 6, 2007, at URL [http://www.consrv.ca.gov/CGS/information/publications/release\\_statements/MS\\_52.pdf](http://www.consrv.ca.gov/CGS/information/publications/release_statements/MS_52.pdf).

TABLE 1  
NONFUEL RAW MINERAL PRODUCTION IN CALIFORNIA<sup>1,2</sup>

(Thousand metric tons and thousand dollars unless otherwise specified)

Mineral	2003		2004		2005	
	Quantity	Value	Quantity	Value	Quantity	Value
Boron minerals	1,150	591,000	1,210	626,000	1,150	713,000
Cement:						
Masonry	W	W	W	W	694	80,600 <sup>e</sup>
Portland	11,600	887,000 <sup>e</sup>	11,900	1,000,000 <sup>e</sup>	11,600	1,130,000 <sup>e</sup>
Clays:						
Bentonite	23	2,560	24	2,640	20	2,200
Common	1,240	19,100	1,230	20,700	1,010	16,600
Fuller's earth	W	W	197	W	189	W
Gemstones	NA	1,080	NA	1,070	NA	1,130
Gold <sup>3</sup> kilograms	4,270	50,100	3,260	43,000	W	W
Sand and gravel:						
Construction	152,000	1,150,000	166,000	1,280,000	163,000	1,440,000
Industrial	1,790	50,100	1,990	55,700	2,030	60,400
Silver <sup>3</sup> kilograms	957	151	801	172	269	63
Stone:						
Crushed	55,500	371,000	55,300 <sup>r,4</sup>	364,000 <sup>r,4</sup>	54,300	455,000
Dimension	40	9,920	42	10,200	41	10,200
Combined values of clays (kaolin), diatomite, feldspar, gypsum (crude), iron ore (usable shipped), lime magnesium compounds, perlite (crude), pumice and pumicite, pyrophyllite [crude (2003)], salt, soda ash, stone [crushed shell (2004)], talc [crude (2004)], zeolites (2004), and values indicated by symbol W	XX	308,000	XX	349,000 <sup>r</sup>	XX	332,000
Total	XX	3,440,000	XX	3,760,000 <sup>r</sup>	XX	4,240,000

<sup>e</sup>Estimated. <sup>r</sup>Revised. NA Not available. W Withheld to avoid disclosing company proprietary data. Withheld values included in "Combined value" data. XX Not applicable.

<sup>1</sup>Production as measured by mine shipments, sales, or marketable production (including consumption by producers).

<sup>2</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>3</sup>Recoverable content of ores, etc.

<sup>4</sup>Excludes certain stones; kind and value included with "Combined values" data.

TABLE 2  
CALIFORNIA: CRUSHED STONE SOLD OR USED, BY KIND<sup>1</sup>

Kind	2004			2005		
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Number of quarries	Quantity (thousand metric tons)	Value (thousands)
Limestone <sup>2</sup>	28 <sup>r</sup>	26,200 <sup>r</sup>	\$123,000 <sup>r</sup>	25	21,700	\$161,000
Dolomite	6	895	4,930	4	705	5,150
Marble	2	(3)	(3)	2	(3)	(3)
Shell	1	W	W	1	(3)	(3)
Granite	25 <sup>r</sup>	11,800 <sup>r</sup>	93,000 <sup>r</sup>	25	13,700	122,000
Traprock	35 <sup>r</sup>	12,100 <sup>r</sup>	104,000 <sup>r</sup>	45	11,600	115,000
Sandstone and quartzite	11 <sup>r</sup>	944 <sup>r</sup>	11,500 <sup>r</sup>	6	3,810	24,300
Slate	4	(3)	(3)	4	318	2,380
Volcanic cinder and scoria	7 <sup>r</sup>	167 <sup>r</sup>	1,940 <sup>r</sup>	6	176	1,810
Miscellaneous stone	29	2,890 <sup>r</sup>	22,100 <sup>r</sup>	21	2,270	22,400
Total	XX	55,300 <sup>r</sup>	364,000 <sup>r</sup>	XX	54,300	455,000

<sup>r</sup>Revised. W Withheld to avoid disclosing company proprietary data. XX Not applicable.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Includes limestone-dolomite reported with no distinction between the two.

<sup>3</sup>Withheld to avoid disclosing company proprietary data; included in "Total."

TABLE 3  
CALIFORNIA: CRUSHED STONE SOLD OR USED BY PRODUCERS  
IN 2005, BY USE<sup>1</sup>

(Thousand metric tons and thousand dollars)

Use	Quantity	Value
<b>Construction:</b>		
Coarse aggregate (+1½ inch):		
Macadam	W	W
Riprap and jetty stone	864	22,900
Filter stone	103	916
Other coarse aggregates	171	1,080
Total	1,140	24,900
Coarse aggregate, graded:		
Concrete aggregate, coarse	949	12,100
Bituminous aggregate, coarse	1,150	11,800
Bituminous surface-treatment aggregate	(2)	(2)
Railroad ballast	209	2,560
Other graded coarse aggregates	813	9,160
Total	3,120	35,600
Fine aggregate (-¾ inch):		
Stone sand, concrete	(3)	(3)
Stone sand, bituminous mix or seal	265	2,280
Screening, undesignated	84	839
Other fine aggregates	333	3,460
Total	682	6,580
Coarse and fine aggregates:		
Graded road base or subbase	4,420	42,200
Unpaved road surfacing	657	5,180
Terrazzo and exposed aggregate	41	839
Crusher run or fill or waste	846	4,580
Other coarse and fine aggregates	2,440	20,600
Total	8,400	73,400
Other construction materials <sup>4</sup>	1,970	28,000
<b>Agricultural:</b>		
Limestone	76	1,100
Poultry grit and mineral food	(5)	(5)
Other agricultural uses	125	2,720
Total	201	3,820
<b>Chemical and metallurgical:</b>		
Cement manufacture	9,520	43,100
Flux stone	(6)	(6)
Glass manufacture	(6)	(6)
Sulfur oxide removal	(6)	(6)
Total	10,000	46,600
<b>Special:</b>		
Asphalt fillers or extenders	(7)	(7)
Whiting or whiting substitute	(7)	(7)
Other miscellaneous uses and specified uses not listed	284	7,150
<b>Unspecified:<sup>8</sup></b>		
Reported	15,700	124,000
Estimated	13,000	104,000
Total	28,400	228,000
Grand total	54,300	455,000

W Withheld to avoid disclosing company proprietary data; included with "Other coarse aggregate."

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Withheld to avoid disclosing company proprietary data; included with "Other graded coarse aggregate."

<sup>3</sup>Withheld to avoid disclosing company proprietary data; included with "Other fine aggregate."

<sup>4</sup>Includes drain fields and pipe bedding.

<sup>5</sup>Withheld to avoid disclosing company proprietary data; included with "Other agricultural uses."

<sup>6</sup>Withheld to avoid disclosing company proprietary data; included in "Total."

<sup>7</sup>Withheld to avoid disclosing company proprietary data; included in "Grand total."

<sup>8</sup>Reported and estimated production without a breakdown by end use.

TABLE 4  
CALIFORNIA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2005, BY USE AND DISTRICT<sup>1</sup>

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3		District 4		District 5	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Construction:										
Coarse aggregate (+1½ inch) <sup>2</sup>	69	1,430	47	558	W	W	W	W	W	W
Coarse aggregate, graded <sup>3</sup>	W	W	W	W	W	W	W	W	W	W
Fine aggregate (-¾ inch) <sup>4</sup>	W	W	W	W	W	W	W	W	W	W
Coarse and fine aggregates <sup>5</sup>	303	3,520	W	W	1,680	15,200	W	W	W	W
Other construction materials <sup>7</sup>	--	--	--	--	276	2,960	330	5,110	63	621
Agricultural <sup>8</sup>	--	--	W	W	--	--	--	--	W	W
Chemical and metallurgical <sup>9</sup>	W	W	W	W	--	--	--	--	W	W
Special <sup>10</sup>	--	--	--	--	--	--	--	--	--	--
Other miscellaneous uses	--	--	--	--	--	--	--	--	--	--
Unspecified: <sup>11</sup>										
Reported	244	2,000	22	147	--	--	486	3,480	5	39
Estimated	100	821	238	2,000	1,000	8,200	231	1,900	1,200	9,800
Total	737	7,960	1,920	16,100	4,060	42,700	2,830	29,900	1,680	14,700
Use	District 6		District 7		District 8		District 9		District 10	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Construction:										
Coarse aggregate (+1½ inch) <sup>2</sup>	--	--	W	W	W	W	W	W	W	W
Coarse aggregate, graded <sup>3</sup>	W	W	W	W	--	--	1,760	13,900	W	W
Fine aggregate (-¾ inch) <sup>4</sup>	--	--	W	W	--	--	W	W	W	W
Coarse and fine aggregates <sup>5</sup>	W	W	W	W	W	W	2,150	15,800	W	W
Other construction materials <sup>7</sup>	--	--	1,020	15,200	--	--	272	4,050	--	--
Agricultural <sup>8</sup>	W	W	W	W	--	--	W	W	W	W
Chemical and metallurgical <sup>9</sup>	--	--	W	W	W	W	5,620	16,000	W	W
Special <sup>10</sup>	--	--	W	W	--	--	--	--	--	--
Other miscellaneous uses	122	4,990	--	--	--	--	161	2,160	--	--
Unspecified: <sup>11</sup>										
Reported	1,230	10,100	5,610	45,900	448	3,660	3,540	26,600	514	4,200
Estimated	314	2,600	137	1,100	1,100	9,300	7,800	64,000	--	--
Total	2,700	25,900	8,820	76,000	3,640	29,100	20,900	146,000	1,630	18,600
Use	District 11		District 12		Unspecified districts					
	Quantity	Value	Quantity	Value	Quantity	Value				
Construction:										
Coarse aggregate (+1½ inch) <sup>2</sup>	W	W	--	--	--	--				
Coarse aggregate, graded <sup>3</sup>	W	W	--	--	--	--				
Fine aggregate (-¾ inch) <sup>4</sup>	--	--	--	--	--	--				
Coarse and fine aggregates <sup>5</sup>	W	W	(6)	(6)	--	--				
Other construction materials <sup>7</sup>	--	--	--	--	--	--				
Agricultural <sup>8</sup>	--	--	--	--	--	--				
Chemical and metallurgical <sup>9</sup>	--	--	--	--	--	--				
Special <sup>10</sup>	--	--	--	--	--	--				
Other miscellaneous uses	--	--	--	--	--	--				
Unspecified: <sup>11</sup>										
Reported	958	6,330	2,880	23,900	43	284				
Estimated	220	1,800	384	3,100	--	--				
Total	2,110	20,200	3,260	27,000	43	284				

W Withheld to avoid disclosing company proprietary data; included in "Total." -- Zero.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Includes filter stone, macadam, riprap and jetty stone, and other coarse aggregate.

<sup>3</sup>Includes bituminous aggregate (coarse), bituminous surface-treatment aggregate, concrete aggregate (coarse), railroad ballast, and other graded coarse aggregate.

<sup>4</sup>Includes screening (undesigned), stone sand (concrete), stone sand bituminous mix or seal, and other fine aggregate.

<sup>5</sup>Includes crusher run or fill or waste, graded road base or subbase, terrazzo and exposed aggregate, unpaved road surfacing, and other coarse and fine aggregates.

<sup>6</sup>Withheld to avoid disclosing company proprietary data; included with "Unspecified: Reported."

<sup>7</sup>Includes drain fields and pipe bedding.

<sup>8</sup>Includes agricultural limestone, poultry grit and mineral food, and other agricultural uses.

<sup>9</sup>Includes cement and glass manufacture, flux stone, and sulfur oxide removal.

<sup>10</sup>Includes asphalt fillers or extenders and whiting or whiting substitute.

<sup>11</sup>Reported and estimated production without a breakdown by end use.

TABLE 5  
 CALIFORNIA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2005,  
 BY MAJOR USE CATEGORY<sup>1</sup>

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	48,400	\$450,000	\$9.29
Plaster and gunitite sands	7,250	87,600	12.07
Concrete products (blocks, bricks, pipe, decorative, etc.)	708	14,800	20.93
Asphaltic concrete aggregates and other bituminous mixtures	18,500	184,000	9.92
Road base and coverings	17,100	147,000	8.61
Road and other stabilization (cement and lime)	115	796	6.92
Fill	9,430	63,400	6.72
Snow and ice control	368	1,180	3.20
Other miscellaneous uses <sup>2</sup>	734	9,250	12.60
Unspecified: <sup>3</sup>			
Reported	39,900	314,000	7.88
Estimated	20,600	171,000	8.27
Total or average	163,000	1,440,000	8.84

<sup>1</sup>Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.

<sup>2</sup>Includes railroad ballast and filtration.

<sup>3</sup>Reported and estimated production without a breakdown by end use.

TABLE 6  
CALIFORNIA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2005, BY USE AND DISTRICT<sup>1</sup>

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products	156	1,740	475	4,440	W	W
Plaster and gunite sands	W	W	--	--	--	--
Asphaltic concrete aggregates and road base materials <sup>2</sup>	258	1,170	1,330	12,700	W	W
Fill	2	19	6	33	68	371
Other miscellaneous uses <sup>3</sup>	(5)	(5)	49	379	132	1,340
Unspecified: <sup>4</sup>						
Reported	284	2,080	61	635	465	5,130
Estimated	897	7,420	596	4,930	172	1,420
Total	1,600	12,400	2,520	23,200	838	8,260
	District 4		District 5		District 6	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products	8,410	78,100	W	W	W	W
Plaster and gunite sands	3,910	43,500	W	W	--	--
Asphaltic concrete aggregates and road base materials <sup>2</sup>	12,700	120,000	1,000	8,510	W	W
Fill	934	6,060	322	2,650	1,260	14,000
Other miscellaneous uses <sup>3</sup>	310	2,670	484	4,180	4,220	49,500
Unspecified: <sup>4</sup>						
Reported	7,920	64,400	--	--	5,600	61,300
Estimated	803	6,640	1,290	10,700	1,270	10,500
Total	35,000	322,000	3,100	26,000	12,300	135,000
	District 7		District 8		District 9	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products	694	5,650	6,040	52,800	15,600	138,000
Plaster and gunite sands	W	W	232	3,200	2,190	29,100
Asphaltic concrete aggregates and road base materials <sup>2</sup>	W	W	3,020	29,000	8,680	70,500
Fill	343	1,850	695	7,250	1,630	6,110
Other miscellaneous uses <sup>3</sup>	272	4,240	111	3,090	25	136
Unspecified: <sup>4</sup>						
Reported	259	1,860	4,030	29,400	12,500	95,900
Estimated	226	1,870	3,120	25,800	6,670	55,100
Total	1,800	15,500	17,200	151,000	47,200	395,000
	District 10		District 11		District 12	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products	W	W	13,900	136,000	1,360	17,900
Plaster and gunite sands	W	W	717	8,600	--	--
Asphaltic concrete aggregates and road base materials <sup>2</sup>	172	917	4,430	45,900	1,620	15,700
Fill	177	1,460	2,820	16,700	1,180	6,910
Other miscellaneous uses <sup>3</sup>	445	3,100	268	460	96	897
Unspecified: <sup>4</sup>						
Reported	1,450	10,400	4,900	31,500	882	7,290
Estimated	2,140	17,700	2,150	17,800	1,310	10,800
Total	4,380	33,600	29,200	257,000	6,440	59,600
	Unspecified districts					
	Quantity	Value				
Concrete aggregate and concrete products	--	--				
Plaster and gunite sands	--	--				
Asphaltic concrete aggregates and road base materials <sup>2</sup>	--	--				
Fill	--	--				
Other miscellaneous uses <sup>3</sup>	--	--				
Unspecified: <sup>4</sup>						
Reported	1,570	4,290				
Estimated	--	--				
Total	1,570	4,290				

W Withheld to avoid disclosing company proprietary data; included in "Other miscellaneous uses." -- Zero.

<sup>1</sup>Data are rounded to no more than three significant digits; may not add to totals shown.

<sup>2</sup>Includes road and other stabilization (cement and lime).

<sup>3</sup>Includes filtration, railroad ballast, and snow and ice control.

<sup>4</sup>Reported and estimated production without a breakdown by end use.

<sup>5</sup>Less than ½ unit.